

PART 70 SIGNIFICANT SOURCE MODIFICATION OFFICE OF AIR QUALITY

**PSI Energy, Inc.
21225 Riverwood Ave.
Noblesville, Indiana 46060**

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this approval.

This approval is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Source Modification No.: 057-14278-00004	
Original signed by Paul Dubenetzky Issued by: Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: October 22, 2001

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SECTION A

SOURCE SUMMARY

This approval is based on information submitted to the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the emission units contained in conditions A.1 through A.2 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this approval pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary power generating plant

Responsible Official:	Mark D. Foster, Project Manager
Source Address:	21225 Riverwood Ave, Noblesville, IN 46060
Mailing Address:	c/o Steven L. Pearl, 1000 E. Main Street, Plainfield, IN 46168
General Source Phone Number:	(317)838-1758
SIC Code:	4911
County Location:	Hamilton
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD 1 of 28 Source Categories

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source is approved to construct and operate the following emission units and pollution control devices:

- (a) Three Natural Gas Fired Combined Cycle Systems [each includes a stationary combustion turbine and Heat Recovery Steam Generator (HRSG)], identified as CT-3, CT-4, and CT-5, with a nominal capacity of 749.5 MMBtu per hour each based on 100% load, 55 F ambient temperature and natural gas higher heating value (833.9 MMBtu/hr at 100% load, -20 F and natural gas higher heating value), using DLN on each turbine and SCR and oxidation catalyst in each HRSG as control, and exhausting to stack 3-2, 4, and 5 respectively.
- (b) One Mechanical Draft Cooling Tower with five cells, identified as WT-1, with a maximum capacity of 100,000 gallons per minute, using a high efficiency mist eliminators as control, and exhausting to stacks WT 1-A through 1-E.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source does not currently have any insignificant activities, as defined in 326 IAC 2-7-1 (21) that have applicable requirements.

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

- (a) It is a major source, as defined in 326 IAC 2-7-1(22);
- (b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).
- (c) It is an affected source under Title IV (Acid Deposition Control) of the Clean Air Act, as defined in 326 IAC 2-7-1(3).

A.5 Acid Rain Permit Applicability [40 CFR Part 72.30]

This stationary source shall be required to have a Phase II, Acid Rain permit by 40 CFR Part 72.30 (Applicability) because:

- (a) The combustion turbines are new units under 40 CR Part 72.6.
- (b) The source cannot operate the combustion units until their Phase II, Acid Rain permit has been issued.

SECTION B GENERAL CONSTRUCTION CONDITIONS

B.1 Definitions [326 IAC 2-7-1]

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

B.2 Effective Date of the Permit [IC13-15-5-3]

Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

B.3 Revocation of Permits [326 IAC 2-1.1-9(5)][326 IAC 2-7-10.5(i)]

Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

B.4 Significant Source Modification [326 IAC 2-7-10.5(h)]

This document shall also become the approval to operate pursuant to 326 IAC 2-7-10.5(h) when, prior to start of operation, the following requirements are met:

- (a) The attached affidavit of construction shall be submitted to the Office of Air Quality (OAQ), Permit Administration & Development Section, verifying that the emission units were constructed as proposed in the application. The emissions units covered in the Significant Source Modification approval may begin operating on the date the affidavit of construction is postmarked or hand delivered to IDEM if constructed as proposed.
- (b) If actual construction of the emissions units differs from the construction proposed in the application, the source may not begin operation until the source modification has been revised pursuant to 326 IAC 2-7-11 or 326 IAC 2-7-12 and an Operation Permit Validation Letter is issued.
- (c) If construction is completed in phases; i.e., the entire construction is not done continuously, a separate affidavit must be submitted for each phase of construction. Any permit conditions associated with operation start up dates such as stack testing for New Source Performance Standards (NSPS) shall be applicable to each individual phase.
- (d) The Permittee shall receive an Operation Permit Validation Letter from the Chief of the Permit Administration & Development Section and attach it to this document.
- (e) The change / modification covered by this significant source modification will be incorporated in the Part 70 draft permit.

B.5 NSPS Reporting Requirement

Pursuant to the New Source Performance Standards (NSPS), Part 60.332, Subpart GG, the source owner/operator is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM, OAQ.
The requirements of 40 CFR Part 60 are also federally enforceable.

SECTION C GENERAL OPERATION CONDITIONS

C.1 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification.
- (c) A responsible official is defined at 326 IAC 2-7-1(34).

C.2 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) when operation begins, including the following information on each facility:
 - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.

If, due to circumstances beyond the Permittee's control, the PMPs cannot be prepared and maintained within the above time frame, the Permittee may extend the date an additional ninety (90) days provided the Permittee notifies:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

The PMP and the PMP extension notification do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall implement the PMPs as necessary to ensure that failure to implement a PMP does not cause or contribute to a violation of any limitation on emissions or potential to emit.
- (c) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ, may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or contributes to any violation. The PMP does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (d) Records of preventive maintenance shall be retained for a period of at least five (5) years. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as

they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.

- (e) The OAQ is reviewing this condition and may revise it in the final Part 70 permit. Any revision to this condition incorporated into the final Part 70 permit shall supercede this condition in the significant source modification.

C.3 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]

- (a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.

- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

Indiana Department of Environmental Management
Permits Branch, Office of Air Quality
100 North Senate Avenue, P.O. Box 6015
Indianapolis, Indiana 46206-6015

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

C.4 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of forty percent (40%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

C.5 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

C.6 Operation of Equipment [326 IAC 2-7-6(6)]

Except as otherwise provided by statute or rule, or in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times, consistent with proper operating temperature of equipment, that the emission units vented to the control equipment are in operation.

C.7 Stack Height [326 IAC 1-7]

The Permittee shall comply with the applicable provisions of 326 IAC 1-7 (Stack Height Provisions), for all exhaust stacks through which a potential (before controls) of twenty-five (25) tons per year or more of particulate matter or sulfur dioxide is emitted by using good engineering practices (GEP) pursuant to 326 IAC 1-7-3.

Testing Requirements [326 IAC 2-7-6(1)]

C.8 Performance Testing [326 IAC 3-6][326 IAC 2-1.1-11]

- (a) Compliance testing on new emission units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up, if specified in Section D of this approval. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this approval, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this approval, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the source submits to IDEM, OAQ a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.9 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]

C.10 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

If required by Section D, all monitoring and record keeping requirements shall be implemented when operation begins. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

C.11 Maintenance of Emission Monitoring Equipment [326 IAC 2-7-5(3)(A)(iii)]

- (a) In the event that a breakdown of the emission monitoring equipment occurs, a record shall be made of the times and reasons of the breakdown and efforts made to correct the problem. To the extent practicable, supplemental or intermittent monitoring of the

parameter should be implemented at intervals no less frequent than required in Section D of this permit until such time as the monitoring equipment is back in operation. In the case of continuous monitoring, supplemental or intermittent monitoring of the parameter should be implemented at intervals no less often than once an hour until such time as the continuous monitor is back in operation.

- (b) The Permittee shall install, calibrate, quality assure, maintain, and operate all necessary monitors and related equipment. In addition, prompt corrective action shall be initiated whenever indicated.

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.12 Compliance Monitoring Plan - Failure to Take Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

- (a) The Permittee is required to implement a compliance monitoring plan to ensure that reasonable information is available to evaluate its continuous compliance with applicable requirements. The compliance monitoring plan can be either an entirely new document, consist in whole of information contained in other documents, or consist of a combination of new information and information contained in other documents. If the compliance monitoring plan incorporates by reference information contained in other documents, the Permittee shall identify as part of the compliance monitoring plan the documents in which the information is found. The elements of the compliance monitoring plan are:
 - (1) This condition;
 - (2) The Compliance Determination Requirements in Section D of this permit;
 - (3) The Compliance Monitoring Requirements in Section D of this permit;
 - (4) The Record Keeping and Reporting Requirements in Section C (General Record Keeping Requirements, and General Reporting Requirements) and in Section D of this permit; and
 - (5) A Compliance Response Plan (CRP) for the compliance monitoring conditions of this permit. CRP's shall be submitted to IDEM, OAQ upon request and shall be subject to review and approval by IDEM, OAQ. The CRP shall be prepared by the commencement of operation by the Permittee and maintained on site, and is comprised of:
 - (A) Reasonable response steps that may be implemented in the event that compliance related information indicates that a response step is needed pursuant to the requirements of Section D of this permit; and
 - (B) A time schedule for taking reasonable response steps including a schedule for devising additional response steps for situations that may not have been predicted.
- (b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition. Failure to take reasonable response steps may constitute a violation of the permit.
- (c) Upon investigation of a compliance monitoring excursion, the Permittee is excused from taking further response steps for any of the following reasons:

- (1) A false reading occurs due to the malfunction of the monitoring equipment. This shall be an excuse from taking further response steps providing that prompt action was taken to correct the monitoring equipment.
 - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for an administrative amendment to the permit, and such request has not been denied.
 - (3) An automatic measurement was taken when the process was not operating.
 - (4) The process has already returned or is returning to operating within "normal" parameters and no response steps are required.
- (d) Records shall be kept of all instances in which the compliance related information was not met and of all response steps taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.
- (e) All monitoring required in Section D shall be performed at all times the equipment is operating. If monitoring is required by Section D and the equipment is not operating, then the Permittee may record the fact that the equipment is not operating or perform the required monitoring.
- (f) At its discretion, IDEM may excuse the Permittee's failure to perform the monitoring and record keeping as required by Section D, if the Permittee provides adequate justification and documents that such failures do not exceed five percent (5%) of the operating time in any quarter. Temporary, unscheduled unavailability of qualified staff shall be considered a valid reason for failure to perform the monitoring or record keeping requirements in Section D.
- (g) The OAQ is reviewing this condition and may revise it in the final Part 70 permit. Any revision to this condition incorporated into the final Part 70 permit shall supercede this condition in the significant source modification.

C.13 Emergency Provisions [326 IAC 2-7-16]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation, except as provided in 326 IAC 2-7-16.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a health-based or technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:
 - (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
 - (2) The permitted facility was at the time being properly operated;
 - (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;

- (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ, within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-5674 (ask for Compliance Section)
Facsimile Number: 317-233-5967

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
 - (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
 - (e) IDEM, OAQ, may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(10) be revised in response to an emergency.
 - (f) Failure to notify IDEM, OAQ, by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.
 - (g) Operations may continue during an emergency only if the following conditions are met:
 - (1) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the

emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

- (2) If an emergency situation causes a deviation from a health-based limit, the Permittee may not continue to operate the affected emissions facilities unless:
 - (A) The Permittee immediately takes all reasonable steps to correct the emergency situation and to minimize emissions; and
 - (B) Continued operation of the facilities is necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value.

Any operation shall continue no longer than the minimum time required to prevent the situations identified in (g)(2)(B) of this condition.

**C.14 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5]
[326 IAC 2-7-6]**

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The documents submitted pursuant to this condition do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.15 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

- (a) Records of all required data, reports and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented upon initial operation of the repowered facility.

C.16 General Reporting Requirements [326 IAC 2-7-5(3)(C)]

- (a) The reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue, P. O. Box 6015
Indianapolis, Indiana 46206-6015

- (b) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ, on or before the date it is due.
- (c) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (d) The first report shall cover the period commencing on the date of operation and ending on the last day of the reporting period. Reporting periods are based on calendar years.

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

- (a) Three Natural Gas Fired Combined Cycle Systems [each includes a stationary combustion turbine and Heat Recovery Steam Generator (HRSG)], identified as CT-3, CT-4, and CT-5, with a nominal capacity of 749.5 MMBtu per hour each based on 100% load, 55 F ambient temperature and natural gas higher heating value (833.9 MMBtu/hr at 100% load, -20 F and natural gas higher heating value), using DLN on each turbine and SCR and oxidation catalyst in each HRSG as control, and exhausting to stack 3-2, 4, and 5 respectively.
- (b) One Mechanical Draft Cooling Tower with five cells, identified as WT-1, with a maximum capacity of 100,000 gallons per minute, using a high efficiency mist eliminators as control, and exhausting to stacks WT 1-A through 1-E.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

Emission Limitations and Standards

D.1.1 Combustion Turbine Emission Limits

The PTE from the new combustion turbine units shall be as follows:

- (a) Annual Emissions:
 - PM (filterable) limited to 144.54 tons per year.
 - PM-10 (filterable and condensible) limited to 144.54 tons per year.
 - SO₂ limited to 27.59 tons per year
 - VOC limited to 18.39 tons per year.
 - CO limited to 147.90 tons per year.
 - NO_x limited to 184.99 tons per year.
- (b) Hourly Emissions:
 - PM (filterable) limited to 33 pounds per hour.
 - PM-10 (filterable and condensible) limited to 33 pounds per hour.
 - SO₂ limited to 6.9 pounds per hour.
 - VOC limited to 2.94 pounds per hour except during startup and shutdown.
 - CO limited to 15 pounds per hour except during startup and shutdown.
 - NO_x limited to 32.7 pounds per hour except during startup and shutdown.

These hourly emission rate are maximum rates at -20 F and 100% load.

These limits and the removal of the three coal-fired boiler # 1, 2 and 3 makes PSD (326 IAC 2-2) not applicable.

D.1.2 40 CFR 60, Subpart GG (Stationary Gas Turbines)

The three (3) natural gas combustion turbines are subject to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines) because the heat input at peak load is equal to or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (a) Limit nitrogen oxides emissions from the natural gas turbines to 0.0092% by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load for the facility. The value of Y shall not exceed 14.4 kilojoules per watt-hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (b) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight.

D.1.3 Formaldehyde Limitations

Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine stack shall not exceed 0.00071 pounds of formaldehyde per MMBtu.

D.1.4 Cooling Tower Emission Limits

The PTE from the new mechanical draft cooling tower shall be as follows:

- (a) PM and PM-10 limited to 3.67 tons per year or 0.84 pounds per hour, thus PSD (326 IAC 2-2) is not applicable.
- (b) Compliance with this limit shall be achieved by operation of the high efficiency mist eliminators.

D.1.5 Startup and shutdown limitations for Combustion Turbines

- (a) A startup or shutdown of the combustion turbine is defined as less than fifty five (55) percent load.
- (b) The NO_x emissions from the combustion turbines stacks shall not exceed 65.6 tons per year during startup and shutdown.
- (c) The CO emissions from the combustion turbines stacks shall not exceed 94.3 tons per year during startup and shutdown.
- (d) The VOC emissions from the combustion turbines stack shall not exceed 7.3 tons per year during startup and shutdown.

This will make PSD (326 IAC 2-2) not applicable.

D.1.6 Old Units Removal

- (a) Within 180 days after the start-up of the last natural gas turbine, the three coal-fired boiler # 1, 2 and 3 shall be removed from service permanently by being removed from the source or made inoperative by other means. This will also make PSD (326 IAC 2-2) not applicable.

- (b) Within 180 days of first electric generation from the re-powered steam turbines, coal fired boiler #1, 2 and 3 stacks and electrostatic precipitator structures shall be removed from existing building.
- (c) Within 180 days of first electric generation from the re-powered steam turbines, coal and ash handling activities associated with the removal from service of boilers #1, 2 and 3 shall be completed and terminated.

Compliance Determination Requirements

D.1.7 Control Equipment Requirements

In order to achieve compliance with limits specified in D.1.1 the permittee shall install the following control equipments:

- (a) To control NO_x emissions from the combined cycle system the combustion turbines will incorporate a dry low-NO_x combustor and use selective catalytic reduction as a post combustion control technology.
- (b) To control CO and VOC emissions from each combined cycle, an oxidation catalyst will be installed downstream of the combustion turbine in the HRSG.

D.1.8 Testing Requirements [326 IAC 3-5] [40 CFR 60.335]

- (a) Pursuant to 326 IAC 3-5, the Permittee shall conduct a performance test, no later than one-hundred and eighty days (180) after the facility startup or monitor installation, on the combustion turbine exhaust stacks (designated as 3-2, 4, and 5) in order to certify the continuous emission monitoring system for CO and NO_x.
- (b) Within sixty (60) days after achieving maximum production rate, but no later than one-hundred and eighty (180) days after initial start-up, the Permittee shall conduct NO_x stack tests for each turbine utilizing methods as approved by the Commissioner. These tests shall be performed in accordance with 40 CFR Part 60.335 and Section C – Performance Testing, in order to document compliance with Condition D.1.2.
- (c) Within one-hundred eighty (180) after initial startup, the Permittee shall perform PM (filterable) and PM₁₀ (filterable and condensable) stack tests for each combustion turbine stack utilizing methods approved by the Commissioner. These test shall be performed in accordance with Section C – Performance Testing, in order to document compliance with Condition D.1.1.
- (d) IDEM may require compliance testing at any specific time when necessary to determine if the source is in compliance. If testing is required by IDEM, compliance shall be determined by a performance test conducted in accordance with Section C – Performance Testing.

D.1.9 40 CFR Part 60, Subpart GG Compliance Requirements (Stationary Gas Turbines)

Pursuant to 40 CFR Part 60, Subpart GG (Stationary Gas Turbines), the Permittee shall monitor the nitrogen and sulfur content of the natural gas on a monthly basis as follows:

- (a) Determine compliance with the nitrogen oxide and sulfur dioxide standards in 40 CFR 60.332 and 60.333(a), per requirements described in 40 CFR 60.335(c);

- (b) Determine the sulfur content of the natural gas being fired in the turbine by ASTM Methods D 1072-80, D 3031-81, D 4084-82, D 3246-81, D-5504-94 or other applicable methods approved by IDEM. The applicable ranges of some ASTM methods mentioned are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the approval of the Administrator; and
- (c) Determine the nitrogen content of the natural gas being fired in the turbine by using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator.

The analyses required above may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor or any other qualified agency.

Owners, operators or fuel vendors may develop custom fuel schedules for determination of the nitrogen and sulfur content based on the design and operation of the affected facility and the characteristics of the fuel supply. These schedules shall be substantiated with data and must be approved by the Administrator before they can be used to comply with the above requirements.

D.1.10 Continuous Emission Monitoring (CEMs)

- (a) The owner or operator of a new source with an emission limitation or permit requirement established under 326 IAC 2-5.1-3 shall be required to install a continuous emissions monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5-1(d).
- (b) The Permittee shall install, calibrate, certify, operate and maintain a continuous emission monitoring system for NO_x and CO, for stacks designated as 3-2, 4, and 5 in accordance with 326 IAC 3-5-2 and 3-5-3.
 - (1) The continuous emission monitoring system (CEMS) shall measure NO_x and CO emissions rates in pounds per hour and parts per million (ppmvd) corrected to 15% O₂. The use of CEMS to measure and record the NO_x and CO hourly limits, is sufficient to demonstrate compliance with the limitations set forth in the permit. To demonstrate compliance with the NO_x limit, the source shall take an average of the pounds per hour over a three (3) hour block. To demonstrate compliance with the CO limit, the source shall take an average of the pounds per hour over a twenty four (24) hour averaging period. The source shall maintain records of the parts per million and the pounds per hour.
 - (2) The Permittee shall determine compliance with Condition D.1.4 utilizing data from the NO_x, CO, and O₂ CEMS, the fuel flow meter, and Method 19 calculations.
 - (3) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
 - (4) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7.
- (c) Pursuant to 40 CFR 60.47(d), the Permittee shall install, calibrate, certify and operate continuous emissions monitors for carbon dioxide or oxygen at each location where nitrogen oxide emissions are monitored.

Record Keeping and Reporting Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]

D.1.11 Record Keeping Requirements

- (a) To document compliance with Condition D.1.6, the Permittee shall maintain records, including raw data of all monitoring data and supporting information, for a minimum of five (5) years from the date described in 326 IAC 3-5-7(a). The records shall include the information described in 326 IAC 3-5-7(b).
- (b) To document compliance with D.1.2, the Permittee shall maintain records of the natural gas analyses, including the sulfur and nitrogen content of the gas, for a period of three (3) years.
- (c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of this permit.

D.1.12 Reporting Requirements

The Permittee shall submit the following information on a quarterly basis:

- (a) Records of excess NO_x and CO emissions (defined in 326 IAC 3-5-7 and 40 CFR Part 60.7) from the continuous emissions monitoring system. These reports shall be submitted within thirty (30) calendar days following the end of each calendar quarter and in accordance with Section C – General Reporting Requirements of this permit.
- (b) The Permittee shall report periods of excess emissions, as required by 40 CFR 60.334(c)

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

OFFICE OF AIR QUALITY COMPLIANCE DATA SECTION

PART 70 SOURCE MODIFICATION CERTIFICATION

Source Name: PSI Energy, Inc.
Source Address: 21225 Riverwood Ave, Noblesville, IN 46060
Mailing Address: 1000 E. Main Street, Plainfield, IN 46168
Source Modification No.: 057-14278-00004

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this approval.

Please check what document is being certified:

- 9 Test Result (specify) _____
- 9 Report (specify) _____
- 9 Notification (specify) _____
- 9 Affidavit (specify) _____
- 9 Other (specify) _____

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

Mail to: Permit Administration & Development Section
Office Of Air Management
100 North Senate Avenue
P. O. Box 6015
Indianapolis, Indiana 46206-6015

PSI Energy, Inc.
1000 E. Main Street
Plainfield, Indiana 46168

Affidavit of Construction

I, _____, being duly sworn upon my oath, depose and say:
(Name of the Authorized Representative)

1. I live in _____ County, Indiana and being of sound mind and over twenty-one (21) years of age, I am competent to give this affidavit.
2. I hold the position of _____ for _____.
(Title) (Company Name)
3. By virtue of my position with _____, I have personal
(Company Name)
knowledge of the representations contained in this affidavit and am authorized to make
these representations on behalf of _____.
(Company Name)
4. I hereby certify that (PSI Energy, Inc.), (21225 Riverwood Ave, Noblesville), Indiana, (46060), has
constructed the (Three Natural Gas Fired Combined Cycle Systems and One Mechanical Draft Cooling
Tower) in conformity with the requirements and intent of the construction permit application received by the
Office of Air Management on (April 16, 2001) and as permitted pursuant to **Source Modification No.**
057-14278-00004 issued on _____

Further Affiant said not.

I affirm under penalties of perjury that the representations contained in this affidavit are true, to the best of my information and belief.

Signature

Date

STATE OF INDIANA)
)SS

COUNTY OF _____)

Subscribed and sworn to me, a notary public in and for _____ County and State of
Indiana on this _____ day of _____, 20 _____.
My Commission expires: _____

Signature

Name (typed or printed)

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH
100 North Senate Avenue
P.O. Box 6015
Indianapolis, Indiana 46206-6015
Phone: 317-233-5674
Fax: 317-233-5967**

**PART 70 SIGNIFICANT SOURCE MODIFICATION
EMERGENCY OCCURRENCE REPORT**

Source Name: PSI Energy, Inc.
Source Address: 21225 Riverwood Ave, Noblesville, IN 46060
Mailing Address: 1000 E. Main Street, Plainfield, IN 46168
Part 70 Significant Source Mod. No.: 057-14278-00004

This form consists of 2 pages

Page 1 of 2

- 9 This is an emergency as defined in 326 IAC 2-7-1(12)
- c The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and
 - c The Permittee must submit notice in writing or by facsimile within two (2) days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16.

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:

Control Equipment:

Permit Condition or Operation Limitation in Permit:

Description of the Emergency:

Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

Page 2 of 2

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency? Y N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO ₂ , VOC, NO _x , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by: _____

Title / Position: _____

Date: _____

Phone: _____

A certification is not required for this report.

Indiana Department of Environmental Management Office of Air Quality

Addendum to the Technical Support Document (TSD) for a Part 70 Significant Source Modification.

Source Background and Description

Source Name:	PSI Energy, Inc
Source Location:	21225 Riverwood Ave, Noblesville, IN 46060
County:	Hamilton
SIC Code:	4911
Operation Permit No.:	T 057-7173-00004
Operation Permit Issuance Date:	Not yet issued
Significant Source Mod. No.:	057-14278-00004
Permit Reviewer:	Ghassan Shalabi

On August 31, 2001, the Office of Air Quality (OAQ) had a notice published in the Topics Newspapers, Inc. Noblesville, Indiana, stating that PSI Energy, Inc. had applied for a Part 70 Significant Source Modification to repower the Noblesville station to 320 MW by replacing the three (3) existing coal fired boilers and support equipment (coal and ash handling systems) with three (3) natural gas fired combustion turbines and one mechanical draft cooling tower. The new equipment will utilize the station's existing steam turbines to operate in combined cycle mode. The turbines have a nominal capacity rate of 749.5 MMBtu per hour each based on 100% load, 55 F ambient temperature and natural gas higher heating value (833.9 MMBtu/hr at 100% load, - 20 F and natural gas higher heating value).

The notice also stated that the OAQ proposed to issue a permit for this installation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

The IDEM, OAQ has made the following addition to the TSD for the proposed Significant Source Modification:

Air Quality Impacts From Minor Sources – Modeling Study

Modeling Overview

IDEM, OAQ, has conducted a modeling analysis of the Limited Potential to Emit (PTE) criteria pollutants and Hazardous Air Pollutants (HAPs) from this proposed modification to:

- (a) Estimate whether or not the Limited PTE criteria pollutants will exceed the National Ambient Air Quality Standards (NAAQS), and
- (b) Compare the Limited PTE HAPs to the US EPA's 1996 National Air Toxics Assessment (NATA) / Cumulative Exposure Project (CEP) values for evaluating air toxics emissions.

For certain HAPs, there is not a NATA/CEP value available; therefore, emissions levels from these pollutants were compared to the Occupational Safety and Health Administration's (OSHA) 8-hour Permissible Exposure Limit (PEL).

Please note that the NATA/CEP and PEL values are not regulatory limits used by IDEM, OAQ; however, they provide a useful indication of a modification's impact on public health.

Modeling Results – Criteria Pollutants

The modeling results indicate that the Limited PTE criteria pollutants from this modification will not exceed the National Ambient Air Quality Standards (NAAQS).

Modeling Results – Hazardous Air Pollutants

The modeling results indicate that the Limited PTE HAPs from this source modification do not exceed the 1996 NATA/CEP values.

NOTE: For Formaldehyde there was not an appropriate NATA/CEP value to compare modeling results to; therefore, the results were compared to the PEL. IDEM, OAQ determined that the Limited PTE for Formaldehyde do not exceed five-tenths of a percent (0.5%) (the actual percentage is 0.076%) of the PEL.

The detailed description of modeling results is attached as appendix (B) to this document.

The IDEM, OAQ has also added following condition to the proposed Significant Source Modification:

D.1.3 Formaldehyde Limitations

Pursuant to 326 IAC 2-1.1-5 (Air Quality Requirements), the formaldehyde emissions from each combustion turbine stack shall not exceed 0.00071 pounds of formaldehyde per MMBtu.

The following conditions were re-numbered accordingly.

On September 26, 2001, Mr. Stephen A. Loeschner submitted comments on the proposed significant source modification. The summary of the comments and corresponding responses is as follows:

Comment 1: Please provide the complete basis and calculation for the (CO) credits and include the degree of mathematical certainty that is attributed to it for the measurement of all fuels and the confidence of all factors.

Response 1: Netting credits are determined by taking the average of the past two years actual emissions. In this case, PSI took the actual fuel usage for the years 1999 and 2000 and determined the emissions based on the AP-42 emission factors for coal fired boilers (Table 1.1-3 (9/98)) and ignition oil (Table 1.3-1 (9/98)). The following summary is the actual emissions for the two fuels for the years 1999 and 2000.

A) CO emissions (Coal)

Year	AP-42 Emission Factor in lb/t	Coal usage tons	Emissions t/yr
1999	0.5*	198300**	4.95
2000	0.5*	207382**	51.8455
Avg (1999-2000)	0.5	202841**	50.71025

* The above AP-42 CO emission factors are rated (A).

**Coal and ignition oil usages were determined based on inventory and usage records.

Methodology: Emissions [ton / yr] = Emission Factor [lb/ton] * Coal usage [ton/yr] * 1 / 2000 [ton / lb]

B) CO emissions (Ignition oil)

Year	AP-42 Emission Factor lb/1000 gal	Oil usage 1000 gal / yr	Emissions t/yr
1999	5 *	126 **	0.315
2000	5 *	85.5 **	0.21375
Avg (1999-2000)	5 *	105.75 **	0.264375

* The above AP-42 CO emission factors are rated (A).

**Coal and ignition oil usages were determined based on inventory and usage records.

Methodology: Emissions [ton / yr] =Emission Factor [lb/1000 gal] * oil usage [1000 gal/yr] * 1 / 2000 [ton / lb]

The definition of the (A) rated emission factors is:

- Excellent. Factors are developed from A and B rated source test data taken from many randomly chosen facilities in the industry population. The source category population is sufficiently specific to minimize variability.

The above emission factors are the most reliable emission factors available to IDEM.

The 1999 amounts are the annual fuel usages reported by the source to IDEM in their annual emission statement, which is used by IDEM for the annual billing purposes. The 2000 amounts are submitted by the source to IDEM in their application for this source modification.

Per 326 IAC 2-1.1-9, the failure to disclose all the relevant facts or misrepresentation in obtaining the permit or permit revision approval is a basis to revoke any permit or any permit revision approval granted by the commissioner.

The OAQ does not dispute the method of calculating the netting credits used in this application.

Comment 2: If the matter of subtracting the measurement and emission factor uncertainty from the credits and from ultimate permit limits for the purpose of establishing synthetic minor status has been adjudicated previously in the favor of industry (i.e. that there is no obligation by permit grantor to subtract it), then please identify the adjudicated case(s) in the addendum to the TSD.

Response 2: As mentioned in the response to comment 1, the (A) rated AP-42 emission factors used in calculating the CO emissions for the purpose of this permit are the most reliable emission factors available to IDEM. Also, it was mentioned in the response to comment 1 that any failure to disclose all the relevant fact or misrepresentation in obtaining the permit or permit revision approval is one of the reasons to revoke any permit or any permit revision approval granted by the commissioner.

IDEM is not aware of any adjudication regarding the matter of subtracting the measurement and emission factor uncertainty from the credits and from ultimate permit limits for the purpose of establishing appropriate limits on a source's potential to emit. The OAQ has consulted its compliance section and the web-site of the Environmental Adjudication Board (EAB) to reach this conclusion.

Comment 3: What is there to prevent the facility from becoming and operating as an approximate 90 MW coal fired plus 150 MW gas fired campus?

Response 3: To assure that PSI will not be a 90 MW coal and 150 MW gas, a condition in the permit has been indicated to remove the coal fired boilers and support equipment from service.

This issue was addressed in the condition D.1.5 (a):

D.1.5 Old Units Removal

- (a) Within 180 days after the start-up of the last natural gas turbine, the three coal-fired boilers # 1, 2 and 3 shall be removed from service permanently by being removed from the source or made inoperative by other means. This will also make PSD (326 IAC 2-2) not applicable.

In general, the new units (combustion turbines) are allowed a reasonable period of shakedown to ensure proper operation. This shakedown period shall not exceed 180 days.

On September 28, 2001, PSI Energy, Inc submitted comments on the proposed Significant Source Modification. The comment and the corresponding response is as follows (changes are bolded and crossed out for emphasis):

Comment 1: Condition C.15 (b), General Record Keeping Requirement: Revise condition to read as follows; "unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented ~~within ninety days of permit issuance~~ **upon initial operation of the re-powered facility.**" The record keeping requirements are applicable to equipment operation, and are not applicable until the equipment begins operation.

Response 1: Condition C.15 (b), Record Keeping Requirement, is revised as follows (changes are bolded and crossed out for emphasis):

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

C.15 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

- (a) Records of all required data, reports and support information shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be kept at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented ~~within ninety (90) days of permit issuance~~ **upon initial operation of the re-powered facility.**

Appendix B

Air Quality Analysis

Introduction

PSI Energy – Noblesville (Cinergy Corp) has applied for a Construction Permit to construct and operate a proposed repowering project for the Noblesville Generating Station located along the White River in Hamilton County, Indiana. The site is located at Universal Transverse Mercator (UTM) coordinates 587684.0 East and 4439024.0 North or 3 miles northeast of Noblesville, Indiana. The proposed repowering project will involve the construction and operation of new equipment consisting of three natural gas-fired combined cycle combustion systems capable of generating approximately 320 megawatts (MW) of electrical power and the shutting down of three existing coal-fired boilers. This project will also consist of a new mechanical draft cooling tower. Hamilton County is designated as attainment for the National Ambient Air Quality Standards. These standards for Nitrogen Dioxide (NO_x), Sulfur Dioxide (SO₂), Carbon Monoxide (CO) and Particulate Matter less than 10 microns (PM₁₀) are set by the United States Environmental Protection Agency (U.S. EPA) to protect the public health and welfare.

URS prepared the construction permit application for Cinergy Corp. The permit application was received by the Office of Air Quality (OAQ) on April 16, 2001. The modeling section of OAQ received the information August of 2001. This document provides OAQ's Air Quality Modeling Section's review of the permit application and air quality analysis.

Air Quality Analysis Objectives

The OAQ review of the air quality impact analysis portion of the permit application will accomplish the following objectives:

- A. Establish which pollutants require an air quality analysis based on source emissions.
- B. Determine the ambient air concentrations of the source's emissions and provide analysis of actual stack height with respect to Good Engineering Practice (GEP).
- C. Demonstrate that the source will not cause or contribute to a violation of the National Ambient Air Quality Standard (NAAQS) or Prevention of Significant Deterioration (PSD) increment.

Summary

Cinergy Corp has applied for a construction permit to construct and operate a repowering project for a natural gas-fired combined cycle combustion plant, 3 miles northeast of Noblesville in Hamilton County, Indiana. The application was prepared by URS of Rolling Meadows, Illinois. Hamilton County is currently designated as attainment for all criteria pollutants. The proposed repowering project did not trigger PSD applicability for any criteria air pollutant and the project is considered a non-major (or minor) modification. However, a voluntary air quality impact assessment was performed to assess the ambient air quality impact of the proposed project to emissions from NO_x, CO, PM₁₀, and SO₂. No analysis was performed for VOCs since the proposed emission rate is well below the 100 ton/year threshold. However, an assessment of the potential impacts of hazardous air pollutants (HAPs) was performed. Modeling results taken from the Industrial Source Complex Short Term (ISCST3) model showed all pollutant impacts were predicted to be less than the significant impact levels and significant monitoring de minimis levels for purposes of a National Ambient Air Quality Standards analysis. Hazardous Air Pollutant (HAPs) emissions were less than 10 tons per year for a single HAP and less than 25 tons per year for a combination of HAPs, therefore, a modeling analysis was not necessary. Because the project does not fall under PSD regulations, an additional impact analysis on the surrounding area (including a Class I analysis) was not conducted and no significant impact on economic growth, soils, vegetation, federal and state endangered species or visibility from the proposed facility was expected.

Part A - Pollutants Analyzed for Air Quality Impact

Indiana Administrative Code (326 IAC 2-2) PSD requirements apply in attainment and unclassifiable areas and require an air quality impact analysis of each regulated pollutant emitted in significant amounts by a new major stationary source or modification. Significant emission levels for each pollutant are defined in 326 IAC 2-2-1. CO, NO_x, SO₂, VOCs and PM₁₀ will be emitted from Cinergy Corp. None of the criteria pollutants will exceed their significant emission rates as shown in Table 1. An air quality analysis was not required for this site since the expected increase in emissions were below the significant emission rates. However, a voluntary air quality analysis was performed by URS and reviewed by OAQ. It should be noted that all emissions are based on the Best Available Control Technology (BACT) determination and other limitations resulting from the OAQ review of the application.

TABLE 1 – Cinergy Corp Significant Emission Rates (tons/yr)		
<u>Pollutant</u>	<u>Maximum Increase in Emissions</u>	<u>Significant Emission Rates</u>
CO	96.6	100.0
NO _x	-2046.5	40.0
SO ₂	-7700.5	40.0
PM ₁₀	-279.8	15.0
VOC (ozone)	12.3	40.0
H ₂ SO ₄	-50.0	7.0

Significant emission rates are established to determine whether a source is required to conduct an air quality analysis. If a source exceeds the significant emission rate for a pollutant, air dispersion modeling is required for that specific pollutant. A modeling analysis for each pollutant is conducted to determine whether the source's modeled concentrations will exceed significant impact levels. If modeled concentrations are below significant impact levels, it is not required to conduct further air quality modeling.

If modeled concentrations exceed the significant impact levels, it is required to conduct more refined modeling, which includes source inventories and background data. These procedures are defined in *Guidelines for Air Quality Maintenance Planning and Analysis, Volume 10, Procedures for Evaluating Air Quality Impacts of New Stationary Sources* (October 1977, U.S. EPA Office of Air Quality Planning and Standards (OAQPS)).

Part B - Significant Impact Analysis

An air quality analysis, including air dispersion modeling, was performed to determine the maximum concentrations of the source emissions on receptors outside of the facility property lines. The modeled emission rates include the start-up and shutdown emissions.

Model Description

The Office of Air Quality review used the Industrial Source Complex Short-Term (ISCST3) model, Version 3, dated April 10, 2000 to determine maximum off-property concentrations or impacts for each pollutant. All regulatory default options were utilized in the United States Environmental Protection Agency (U.S. EPA) approved model, as listed in the 40 Code of Federal Register Part 51, Appendix W *Guideline on Air Quality Models*. The Auer Land Use Classification scheme was referred to determine the land use in a 3-kilometer (1.9-mile) radius from the source. The area is considered agricultural; therefore a rural classification was used. The model also utilized the Schulman-Scare algorithm to account for building downwash effects. Stacks associated with the proposed combined cycle power facility are below the Good Engineering Practice (GEP) formula for stack heights. This indicates that wind flow over and around surrounding buildings can influence the dispersion of concentrations coming from the stacks. 326 IAC 1-7-3 requires a study to demonstrate that excessive modeled concentrations will not result from stacks with heights less than the GEP stack height formula. These aerodynamic downwash parameters were calculated using U.S. EPA's Building Profile Input Program (BPIP).

Meteorological Data

The meteorological data used in the ISCST3 model consisted of surface data from the Indianapolis Airport National Weather Service station merged with the mixing heights from Peoria, Illinois Airport National Weather Service Station for the latest available five-year period (1990-1994). The 1990-1994 meteorological data was obtained from the U.S. EPA Support Center for Regulatory Air Model electronic Bulletin Board and preprocessed into ISCST3 format with U.S. EPA's PCRAMMET program.

Receptor Grid

Ground-level points (receptors) surrounding the source were input into the model to determine the maximum modeled concentrations that would occur at each point. OAQ modeling utilized receptor grids out to 10 kilometers (6.2 miles) for all pollutants. Dense receptor grids surrounded the property with receptors spaced every 100 meters (328 feet) out to 1.5 kilometers (0.9 miles), receptors spaced every 500 meters (1640 feet) from 1.5 kilometers to 3 kilometers (1.7 miles), receptors spaced every 1000 meters (3280 feet) from 3 kilometers to 10 kilometers (6.2 miles). Discrete receptors were placed 100 meters on Cinergy Corp property lines and also at areas where potentially sensitive groups might be located, such as schools, parks or penitentiaries.

Modeled Results

Maximum modeled concentrations for each pollutant are listed below in Table 2 and are compared to each pollutant's significant impact level for Class II areas, as specified by U.S. EPA in Federal Register, Volume 43, No. 118, page 26398 Monday, June 19, 1978.

TABLE 2 – Summary of OAQ Significant Impact Analysis for Hamilton County (ug/m3)					
<u>Pollutant</u>	<u>Year</u>	<u>Time-Averaging Period</u>	<u>Cinergy Maximum OAQ Modeled Impacts</u>	<u>Significant Impact Levels</u>	<u>Significant Monitoring de Minimis Levels</u>
CO	1993	1-hour	325.98	2000.0	a
CO	1993	8-hour	107.83	500.0	575.0
NO ₂	1990	Annual	0.124	1.0	14.0
SO ₂	1991	3-hour	4.185	25.0	a
SO ₂	1993	24-hour	1.162	5.0	13.0
SO ₂	1990	Annual	0.064	1.0	a
PM ₁₀	1993	24-hour	3.91	5.0	10.0
PM ₁₀	1990	Annual	0.219	1.0	a

^a No limit exists for this time-averaged period

All modeled concentrations for each pollutant at all applicable time-averaged periods were below both the significant impact levels and significant monitoring de minimis levels. No excessive concentrations will result due to stack heights less than the GEP stack height formula. Existing air quality concentrations as recorded by monitors throughout the area are below National Ambient Air Quality Standards for each pollutant. No significant short-term or long-term health impacts are expected as a result of the proposed facility and no further refined air quality analysis is required as well as no pre-construction monitoring requirements.

Part C - Ozone Impact Analysis

Ozone formation tends to occur in hot, sunny weather when NO_x and VOC emissions

photochemically react to form ozone. Many factors such as light winds, hot temperatures and sunlight are necessary for higher ozone production. Since the proposed repowering project will have a VOC emission rate of approximately 20 tons/year, well below the threshold requiring an analysis, URS did not perform an air quality impact assessment.

Part D - Hazardous Air Pollutant Analysis and Results

The proposed repowering project did not trigger PSD applicability for any criteria air pollutant and the project is considered a non-major (or minor) modification. Hazardous Air Pollutant (HAPs) emissions were less than 10 tons per year for a single HAP and less than 25 tons per year for a combination of HAPs, therefore, a modeling analysis was not necessary. However, a voluntary assessment of the potential impacts of hazardous air pollutants (HAPs) was performed by URS. Per special request, the OAQ staff reviewed the HAPS modeling and the results are listed below.

As part of the air quality analysis, OAQ requests data concerning the emission of 188 Hazardous Air Pollutants (HAPs) listed in the 1990 Clean Air Act Amendments which are either carcinogenic or otherwise considered toxic. These substances are listed as air toxic compounds on the State of Indiana, Department of Environmental Management, Office of Air Quality's construction permit application Form Y. Any one HAP over 10 tons/year or all HAPs with total emissions over 25 tons/year will be subject to toxic modeling analysis.

OAQ performed toxic modeling using the ISCST3 model for all HAPs. Modeling was performed using the worst-case stack parameters and a unit emission rate of 1 lb/hr for a single stack (since the 3 stacks are identical and in close proximity to each other). Modeling was performed using the 1990-1994 meteorological data from Peoria-Indianapolis. The maximum modeled 8-hour value was recorded from the 1990 meteorological data. Maximum 8-hour concentrations were determined by multiplying the total HAP emissions by the modeled 8-hour value and the concentrations were recorded as a percentage of each HAP Permissible Exposure Limit (PEL). The PELs were established by the Occupational Safety and Health Administration (OSHA) and represent a worker's exposure to a pollutant over an 8-hour workday or a 40-hour work week.

In Table 3 below, the results of the HAP analysis with the emission rates, modeled concentrations and the percentages of the PEL for each HAP are listed. All HAPs concentrations were modeled below 0.5% of their respective PELs. The 0.5% of the PEL represents a safety factor of 200 taken into account when determining the health risk of the general population.

TABLE 3 - HAPS Analysis for Cinergy Corp					
<u>Hazardous Air Pollutants</u>	<u>Total HAP Emissions</u>	<u>Modeled 8-Hr Value</u>	<u>Maximum 8-hour concentrations</u>	<u>PEL</u>	<u>0.5% of PEL</u>
	(lb/hr)	(ug/m3)	(ug/m3)	(ug/m3)	(ug/m3)
Acetaldehyde	0.099	0.40114	0.040	360000.0	1800
Acrolein	0.016		0.006	250	1.3
Benzene	0.03		0.012	3200.0	16
Ethyl Benzene	0.079		0.032	435000.0	2175
Formaldehyde	1.7594		0.706	930.0	4.65
Naphthalene	0.003		0.001	50000.0	250
PAHs	0.005		0.002	^a	---
Toluene	0.322		0.129	750000.0	3750
Xylene	0.159		0.064	435000.0	2175

^a No limit exists for this time-averaged period

Indiana Department of Environmental Management Office of Air Quality

Technical Support Document (TSD) for a Part 70 Significant Source Modification.

Source Background and Description

Source Name:	PSI Energy, Inc.
Source Location:	21225 Riverwood Ave, Noblesville, IN 46060
County:	Hamilton
SIC Code:	4911
Operation Permit No.:	T 057-7173-00004
Operation Permit Issuance Date:	Not yet issued
Significant Source Modification No.:	057-14278-00004
Permit Reviewer:	Ghassan Shalabi

The Office of Air Quality (OAQ) has reviewed a modification application from PSI Energy, Inc. relating to the construction of the following emission units and pollution control devices:

- (a) Three Natural Gas Fired Combined Cycle Systems [each includes a stationary combustion turbine and Heat Recovery Steam Generator (HRSG)], identified as CT-3, CT-4, and CT-5, with a nominal capacity of 749.5 MMBtu per hour each based on 100% load, 55 F ambient temperature and natural gas higher heating value (833.9 MMBtu/hr at 100% load, -20 F and natural gas higher heating value), using DLN on each turbine and SCR and oxidation catalyst in each HRSG as control, and exhausting to stack 3-2, 4, and 5 respectively.
- (b) One Mechanical Draft Cooling Tower with five cells, identified as WT-1, with a maximum capacity of 100,000 gallons per minute, using a high efficiency mist eliminators as control, and exhausting to stack WT 1-A through 1-E.

History

On April 16, 2001, PSI Energy, Inc submitted an application to the OAQ requesting the replacement of the three existing coal fired boilers #1, 2, and 3 and support equipment (coal and ash handling systems) with three natural gas fired combined cycle systems and one mechanical draft cooling tower. The new equipment will utilize the station's existing steam turbines. Since the new units are combined cycle systems [include combustion turbines and HRSG] with heat input more than 250 MMBtu/hr, the source will be one of the 28 listed source categories. PSI energy, Inc. has applied for a Part 70 permit on November 14, 1996. The Part 70 permit is not yet issued.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
3-2	Combustion Turbine CT-3	175	13	323,760	241
4	Combustion Turbine CT-4	175	13	323,760	241

5	Combustion Turbine CT-5	175	13	323,760	241
WT1-A through 1-E	Cooling Tower (5 cells)	38*	34 * (each cell)	1,356,432.48*	Ambient

* These numbers are the worst case values. Since the cooling tower design was not finalized at the time of issuing this permit, the final design values might be different.

Recommendation

The staff recommends to the Commissioner that the Part 70 Significant Source Modification be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on April 16, 2001, Additional information was received on June 01, August 6 and August 15, 2001.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, 3 Pages)

Potential To Emit of Modification

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	137.07
PM-10	137.07
SO ₂	27.59
VOC	23.14
CO	359.89
NO _x	922.06

HAP's	Potential To Emit (tons/year)
Toluene	1.41
Formaldehyde	7.71
Other	1.71
TOTAL	10.83

Justification for Modification

The Part 70 Operating permit is being modified through a Part 70 Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5 (f) (4), the modification has the potential to emit more than 25 tons per year of PM , PM-10, SO₂, or NO₂, and more than 100 tons per year of CO.

County Attainment Status

The source is located in Hamilton County.

Pollutant	Status
PM-10	Attainment
SO ₂	Attainment
NO ₂	Attainment
Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and oxides of nitrogen (NO_x) are precursors for the formation of ozone. Therefore, VOC and NO_x emissions are considered when evaluating the rule applicability relating to the ozone standards. Hamilton County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.
- (b) Hamilton County has been classified as attainment or unclassifiable for PM-10, SO₂, NO₂, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 and 40 CFR 52.21.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	PTE (tons/year)
PM	1618.76
PM-10	499.43
SO ₂	31244.59
VOC	18.37
CO	160.64
NO _x	5527.9

- (a) This existing source is a major stationary source because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories.
- (b) These emissions are based upon PTE reported in the source's Tv application submitted to IDEM on November 14, 1996.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

	Potential to Emit (tons/year)						
Process/facility	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
PTE of New Units (After control)	147.58*	147.58*	27.59	18.39	147.90	184.99	7.59
Removal of Emissions from Existing Equipment (avg 1999 / 2000)	589.23**	427.33**	7728.18	6.11	50.86	2232.06	
Contemporaneous Increases	0	0	0	0	0	0	
Contemporaneous Decreases	0	0	0	0	0	0	
Net Emissions	-441.65	-279.75	-7700.59	12.28	97.04	-2047.07	
Significant Levels	25	15	40	40	100	40	

* Controlled PTE PM and PM-10 are higher than uncontrolled due to additional PM / PM10 from ammonium sulfates, approximately 0.6 lbs/hr

**Includes condensable Particulate from coal fired boiler, determined per ap-42 table 1.1-5 (9/98)

To control NO_x emissions from the combined cycle system the combustion turbines will incorporate a dry low-NO_x combustor and use selective catalytic reduction as a post combustion control technology. To control CO emissions from each combined cycle, an oxidation catalyst is being proposed for installation downstream of the combustion turbine in the HRSG.

This modification to an existing major stationary source is not major because the emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, and 40 CFR 52.21, the PSD requirements do not apply.

Federal Rule Applicability

- (a) The three Natural Gas Fired Combined Cycle Systems are subject to the New Source Performance Standard, 326 IAC 12, (40 CFR 60, Subpart GG) because the heat input at peak load is equal or greater than 10.7 gigajoules per hour (10 MMBtu per hour), based on the lower heating value of the fuel fired.

Pursuant to 326 IAC 12-1 and 40 CFR 60, Subpart GG (Stationary Gas Turbines), the Permittee shall:

- (1) Limit nitrogen oxides emissions to 0.0092 % by volume at 15% oxygen on a dry basis, as required by 40 CFR 60.332, to:

$$STD = 0.0075 \frac{(14.4)}{Y} + F,$$

where STD = allowable NO_x emissions (percent by volume at 15 percent oxygen on a dry basis).

Y = manufacturer's rated heat rate at manufacturer's rated load (kilojoules per watt hour) or, actual measured heat rate based on lower heating value of fuel as measured at actual peak load

for the facility. The value of Y shall not exceed 14.4 kilojoules per watt hour.

F = NO_x emission allowance for fuel-bound nitrogen as defined in paragraph (a)(3) of 40 CFR 60.332.

- (2) Limit sulfur dioxide emissions, as required by 40 CFR 60.333, to 0.015 percent by volume at 15 percent oxygen on a dry basis, or use natural gas fuel with a sulfur content less than or equal to 0.8 percent by weight;
 - (3) Install a continuous monitoring system to monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine, as required by 40 CFR 60.334(a);
 - (4) Monitor the sulfur content and nitrogen content of the fuel being fired in the turbine, as required by 40 CFR 60.334(b).
 - (5) Report periods of excess emissions, as required by 40 CFR 334(c).
- (b) The HRSGs will not be equipped with supplemental natural gas fired duct burners, therefore 40 CFR 60 Subparts Da (Electric Utility Steam generating Units), Db (New Source Performance Standards for Industrial Steam Generating Units), or Dc (New Source Performance Standards for Small Industrial-Commercial-Institutional Steam Generating Units) do not apply.
- (c) Acid Rain Permit Applicability [40 CFR Part 72.30]
This stationary source shall be required to have a Phase II, Acid Rain permit by 40 CFR Part 72.30 (Applicability) because:
- (a) The combustion turbines are new units under 40 CR Part 72.6.
 - (b) The source cannot operate the combustion units until their Phase II, Acid Rain permit has been issued.
- (d) The net emissions from the replacement of the three existing coal fired boilers #1, 2, and 3 and support equipment (coal and ash handling systems) with three natural gas fired combined cycle systems and one mechanical draft cooling tower will be bellow PSD significant levels, therefore 326 IAC 2-2 does not apply.
- (e) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 63) applicable to this proposed modification.

State Rule Applicability - Individual Facilities

326 IAC 2-4.1-1 (HAPs Major Source: New Source Toxics Control)

The New Source Toxics Control rule requires any new or reconstructed major source of hazardous air pollutants (HAPs) for which there are no applicable NESHAP to implement maximum achievable control technology (MACT), determined on a case-by-case basis, when the potential to emit is greater than 10 tons per year of any single HAP. Information on emissions of the 187 hazardous air pollutants are listed in the OAQ Construction Permit Application, Form Y (set forth in the Clean Air Act Amendments of 1990). These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industry.

The New Source Toxic Rule is not applicable because any single HAP emission is not greater than or equal to 10 tons per year and any combination HAP emissions are not greater than or equal to 25 tons per year.

326 IAC 2-6 (Emission Reporting)

The proposed project is subject to 326 IAC 2-6 because the PTE CO, PTE NO₂, and PTE PM-10 are greater than 100 tons per year. Pursuant to this rule, the owner or operator of this facility must annually submit an emission statement to the commissioner. The annual statement must be received by July 1 of each year and must obtain the minimum requirements as specified in 326 IAC 2-6-4.

326 IAC 3-5 (Continuous Monitoring of Emissions)

The proposed facility is subject to 326 IAC 3-5 (Continuous Monitoring of Emissions) because the unit is a fossil fuel-fired steam generator with a heat input capacity greater than 100 MMBtu per hour as defined by 326 IAC 3-5-1(b)(2).

- (a) Pursuant to 326 IAC 3-5-1(c)(2)(A)(i), an opacity monitor is not required because only gaseous fuel is combusted. The only fuel combusted at this source is natural gas.
- (b) Pursuant to 326 IAC 3-5-1(c)(2)(B), an SO₂ continuous emission monitor (CEM) is not required because the source is not equipped with an SO₂ control.
- (c) Pursuant to 326 IAC 3-5-1(d)(1), the owner or operator of a new or existing source with an emission limitation or permit requirement established under 326 IAC 2-7 shall be required to install a continuous emission monitoring system or alternative monitoring plan as allowed under the Clean Air Act and 326 IAC 3-5.

For NO_x and CO, the Permittee shall install, calibrate, certify, operate and maintain a continuous monitoring system for stacks designated as 3-2, 4 and 5 in accordance with 326 IAC 3-5-2 and 3-5-3.

- (1) The continuous emission monitoring system (CEMS) shall measure NO_x and CO emissions rates in pounds per hour and parts per million (ppmvd) at 15% O₂. To demonstrate compliance with the NO_x limit, the source shall take an average of the parts per million (ppm) at 15% O₂ over a three (3) hour block. To demonstrate compliance with the CO limit, the source shall take an average of the parts per million (ppm) 15% O₂ over a twenty four (24) hour period. The source shall maintain records of the parts per million and the pounds per hour.
- (2) The Permittee shall submit to IDEM, OAQ, within ninety (90) days after monitor installation, a complete written continuous monitoring standard operating procedure (SOP), in accordance with the requirements of 326 IAC 3-5-4.
- (3) The Permittee shall record the output of the system and shall perform the required record keeping, pursuant to 326 IAC 3-5-6, and reporting, pursuant to 326 IAC 3-5-7. The source shall also be required to maintain records of the amount of natural gas combusted per turbine on a monthly basis and the heat input capacity.

Compliance with this condition shall determine continuous compliance with the NO_x and CO emission limits established in this permit.

326 IAC 6-3-2 (Process Operations)

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour and} \\ P = \text{process weight rate in tons per hour}$$

The High efficiency mist eliminator shall be in operation at all times the mechanical draft cooling tower is in operation, in order to comply with this limit.

326 IAC 7-1 (Sulfur Dioxide Emission Limitations)

The proposed power plant is subject to the requirements of 326 IAC 7-1 because the plant is a fuel combustion facility and the SO₂ potential to emit is greater than 25 tons per year. Pursuant to 326 IAC 7-1.1-2, there are no specific emission limitations for the combustion of natural gas. Pursuant to 326 IAC 7-2-1, the Permittee shall submit natural gas reports of the calendar month average sulfur content, heat content, natural fuel consumption and sulfur dioxide emission rate in pounds per million Btu, upon request of OAQ.

326 IAC 8 (Volatile Organic Compound Requirements)

The VOC potential emissions are 23.14 tons per year, therefore 326 IAC 8-1-6 (reduction of VOC emissions using best available control technology (BACT)) does not apply.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this modification are specified under continuous emissions monitoring system rule applicability in this TSD.

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. 057-14278-00004.

Appendix A: Emissions calculations

Page 1 of 3

Company Name: PSI Energy
Address: 1000 East Main Street, Plainfield, IN 46168
CP: 057-14278
Plt: 057-00004

Combustion Turbine PTE Before Control

Heat Input @ 55 F/turbine 675.2 MMBtu/hr LHV (749.5 MMBtu/hr HHV)
Number of Turbines 3
Turbine Operation (hrs/yr):
Normal 8760
Startup 638

Pollutant	Emission Factor lb/hr	PTE t/yr	PTE startups t/yr	Total PTE t/yr	Cooling Tower t/yr	Total
NOx	70.3	285.4883	65.6	922.0649		922.0649
CO	21.8	88.5298	94.3	359.8894		359.8894
SO2	2.1	9.198	0	27.594		27.594
VOC	1.3	5.2793	7.3	23.1379		23.1379
PM/PM10	10.4	45.552	0	136.656	3.67	140.326

Heat Input @ - 20F/turbine 751.3 MMBtu/hr LHV (833.9 MMBtu/hr HHV)
Number of Turbines 3
Turbine Operation (hrs/yr): 8760

Pollutant	Emission Factor lb/hr	PTE t/yr	Total PTE t/yr
NOx	78.1	342.078	1026.234
CO	25	109.5	328.5
SO2	2.3	10.074	30.222
VOC	1.4	6.132	18.396
PM/PM10	10.2	44.676	134.028

Heat Input @ 55 F/turbine		Combustion Turbine PTE After Control
		675.2 MMBtu/hr LHV (749.5 MMBtu/hr HHV)
Number of Turbines		3
Turbine Operation (hrs/yr):		
Normal		8760
Startup		638

Pollutant	Emission Factor lb/hr	PTE t/yr	PTE startups t/yr	Total PTE t/yr	Cooling Tower t/yr	Total
NOx	9.8	39.7978	65.6	184.9934		184.9934
CO	4.4	17.8684	94.3	147.9052		147.9052
SO2	2.1	9.198	0	27.594		27.594
VOC	0.91	3.69551	7.3	18.38653		18.38653
PM/PM10	11**	48.18	0	144.54	3.67	148.21

Combustion turbine emission factors are vendor provided data.

PTE, heat input and total PTE are based on the annual average temperature of 55 F

PTE NOx, CO, an VOC are based on 8760 hrs/yr- startup/shutdown periods (I.e. 8760-638)

NOx reduction eff. = 86%, CO reduction eff. = 80%, VOC reduction Eff. = 30%

** Includes additional PM / PM10 from ammonium sulfates, approximately 0.6 lbs/hr

Heat Input @ - 20F/turbine		751.3 MMBtu/hr LHV (833.9 MMBtu/hr HHV)
Number of Turbines		3
Turbine Operation (hrs/yr):		8760

Pollutant	Emission Factor lb/hr	E-F for 3 CT	PTE t/yr	Total PTE t/yr
NOx	10.93	32.79	47.8734	143.6202
CO	5	15	21.9	65.7
SO2	2.3	6.9	10.074	30.222
VOC	0.98	2.94	4.2924	12.8772
PM/PM10	10.2	30.6	44.676	134.028

Combustion turbine emission factors are vendor provided data.

Combustion turbine emission factors are vendor provided data.

PTE, heat input and total PTE are based on the annual average temperature of 55 F

PTE NOx, CO, an VOC are based on 8760 hrs/yr- startup/shutdown periods (I.e. 8760-638)

Pollutant	HAP's		Before Control	After Control
	e-factor lb/MMBtu	PTE lb/hr	3 Turbine PTE t/yr	3 Turbine PTE t/yr
Toluene	1.30E-04	0.1	1.41	0.99
Formaldehyde	7.10E-04	0.59	7.71	5.4
Other	1.58E-04	0.13	1.71	1.2
Total		0.74	10.83	7.59

Emission factors taken from AP-42 (April, 2000), table 3.1-3

VOC control = 30%

Emissions (ton/yr) = Heat input (MMBtu/hr)*Emission factor (lb/MMBtu)*8,760 hr/yr*1ton/2000 lb

Cooling Tower Emissions

	Value	Units	Calculation
Number of cycles	5	Cycles	
Total Dissolved Solids (TDS)	650	mg/l	
Chemical Additives	90	mg/l	
Circulating water TDS	2.79E-02	lb/gal	$\frac{\{(5.0)(650 \text{ mg/L})+(90 \text{ mg/L})\}(1.0 \text{ g}/1000 \text{ mg})(3.785 \text{ L}/\text{gal})}{453.6 \text{ g}/\text{lb}}$
Cooling water flowrate	100,000	gallons/min	
Cooling tower drift rate	0.0005%		
Drift	262,800	gal/yr	$5\text{E-}06*100,000 \text{ gal}/\text{min}*60 \text{ min}/\text{hr}*24 \text{ hr}/\text{day}*365 \text{ day}/\text{yr}$
Drift Particulate	3.67	t/yr	$(2.79\text{E-}02 \text{ lb}/\text{gal}*218,124 \text{ gal}/\text{yr}) / 2000 \text{ lb}/\text{t}$